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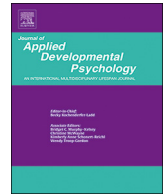
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# Adolescents' engagement trajectories in multicultural classrooms: The role of the classroom context

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## ABSTRACT

This study investigates three important aspects of the classroom context in shaping adolescents' classroom engagement trajectories: (a) teacher support, (b) peer norms (i.e., descriptive and popularity norms), and (c) ethnic classroom composition (i.e., ethnic heterogeneity and proportion of majorities). An ethnically diverse sample of 730 adolescents from Grades 9 to 11 was followed annually. Longitudinal multilevel models revealed that more teacher support and higher classroom-levels of engagement (i.e., descriptive norms) promote adolescents' behavioral and emotional engagement. Moreover, more ethnic heterogeneity in the classroom related to less steep decreases in behavioral engagement over time, whereas higher proportions of majorities in the classroom were associated with steeper decreases in emotional engagement over time. Associations were the same for ethnic minorities and majorities. Furthermore, teacher support and descriptive norms jointly buffered against declining behavioral engagement trajectories. In general, this study underscored the importance of the classroom context in adolescents' behavioral and emotional engagement.

## Introduction

A major concern in today's multicultural schools is that some ethnic groups consistently achieve below average (Uline & Johnson, 2005). One possible explanation for this achievement gap may be found in differences between adolescents' level of engagement in school (Bingham & Okagaki, 2012). However, few studies have investigated the classroom engagement of ethnic minorities, and even fewer have included aspects of the classroom context that might explain their engagement trajectories. This longitudinal study investigates the role of the classroom context in shaping adolescents' engagement trajectories during secondary school, and examines whether there are differences between ethnic minorities and majorities in the role of the classroom context.

According to the contextual risk and resilience perspective (e.g., Motti-Stefanidi & Masten, 2017), there are several risks and resources in the school context that affect the academic and social adaptation of ethnic minorities. Possible risk factors include low academic expectations by teachers, peer exclusion, and facing stereotype threat.

Moreover, ethnic minorities are more likely to perceive their school climate as threatening, more likely to attend schools that are understaffed and that have few resources to create positive learning environments and nursing relationships (Suárez-Orozco, Rhodes, & Milburn, 2009). The mismatch between adolescents' needs and the social context has been proposed as an explanation for declining trajectories in classroom engagement (e.g., Wang & Eccles, 2012). In contrast, aspects of the classroom context can also serve as resources for ethnic minorities, and thus protect their school adjustment. For instance, ethnic minorities may benefit more from supportive relationships with teachers and a peer context that promotes academic behaviors, as they often lack educational resources and effective support at home (Shin, Daly, & Vera, 2007; Suárez-Orozco et al., 2009). Also, the degree of ethnic diversity in the classroom might matter for ethnic minorities' engagement, as it reflects the degree of intergroup contact of minorities with majorities (Demanet & Van Houtte, 2011). In general, it is suggested that the development of ethnic minorities' classroom engagement may be more contingent on risk and resource factors in the classroom context, such as teacher-student relationships, peer norms,

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and ethnic classroom composition, than that of their majority peers in the same context (Motti-Stefanidi & Masten, 2017).

Adding to prior research on adolescents' engagement in secondary school, which has been mainly cross-sectional, this longitudinal study aims to clarify the role of the classroom context in classroom engagement trajectories using an ethnically diverse sample. Specifically, we examine the level of teacher support, peer norms regarding engagement, and ethnic classroom composition, as central factors in the development of classroom engagement (Fredricks, Filsecker, & Lawson, 2016; Motti-Stefanidi & Masten, 2017). Furthermore, we investigate differences between ethnic minorities and majorities in the role of the classroom context. In addition, we examine the interplay between teacher support and peer norms in classroom engagement trajectories, as teachers and peers are interconnected and therefore can jointly affect adolescents' engagement (Bronfenbrenner & Morris, 2006). The role of the classroom context is important for adolescents' academic adjustment, as the classroom environment in the early years can explain changes in students' behaviors over time (Barth, Dunlap, Dane, Lochman, & Wells, 2004; Kellam, Ling, Merisca, Brown, & Ialongo, 1998).

The remainder of this introduction describes (a) the classroom engagement of ethnic minorities, and subsequently the role of (b) ethnic diversity in the classroom, (c) teacher support, (d) peer norms, and (e) the interplay between teachers and peers in shaping adolescents' engagement trajectories. In each of the sections, we discuss possible differences between ethnic minorities and majorities in the role of the classroom context.

#### *Classroom engagement of ethnic minorities*

Adolescents' engagement in school is a necessary condition to learn, achieve, and graduate from school (Fredricks et al., 2016). It is described as "the quality of a student's connection or involvement with the endeavor of schooling and hence with the people, activities, goals, values, and place that compose it" (Skinner, Kindermann, & Furrer, 2008, p. 494). Taking a motivational perspective on the development of (dis) engagement, the dynamic model of engagement formulated by Skinner and Pitzer (2012) postulates that engagement reflects the outward manifestation of motivation, which is grounded in the social and learning context. Following Skinner, Kindermann, and Furrer (2008), we distinguish between behavioral and emotional engagement. Behavioral engagement is conceptualized in terms of students' action initiations, efforts, and attention in the classroom, whereas emotional engagement refers to students' emotional states during classroom activities, such as their interest, enjoyment, and enthusiasm (Skinner, Kindermann, & Furrer, 2008). Prior research revealed that adolescents' engagement is decreasing during secondary school (Engels et al., 2016; Engels et al., 2017; Wang & Eccles, 2012), which places them at increased risk of school drop-out and academic failure (Janosz, Archambault, Morizot, & Pagani, 2008). For many students, educational transitions are a challenging time for their adjustment to school, with an increased risk of dropping out of school. Therefore, the years before such educational transition (i.e., transition from secondary to higher education) could be a critical developmental period for detecting signs of academic and emotional maladjustment (Engels, Pakarinen, Lerkkanen, & Verschueren, 2019; Skinner, Furrer, Marchand, & Kindermann, 2008). In order to fully understand how engagement develops during adolescence, more insight is needed in factors that predict engagement trajectories.

Various theories have been proposed for explaining the development of ethnic minorities' classroom engagement. Following cultural discontinuity theories, differences between the ethnic minority and mainstream culture in for instance behavioral norms may interfere with minority students' engagement and learning in school (e.g., Bingham & Okagaki, 2012), such as the difference between the mainstream cultural values of individualism and competition, and the minority cultural

value of communalism (Tyler et al., 2008). Furthermore, ethnic minorities might face oppression and discrimination, and therefore could develop identities that oppose the values of the mainstream culture, including intentionally disengaging from school (Fordham & Ogbu, 1986; Ogbu, 1992). Consistent with this reasoning, studies have revealed that ethnic minorities (i.e., African American) are more likely to report lower levels of behavioral engagement (Li & Lerner, 2011; Wang & Eccles, 2012) and emotional engagement (Johnson, Crosnoe, & Elder, 2001; Li & Lerner, 2011) over time compared to majorities (i.e., European American).

Although the concept of classroom engagement has received much research attention over the last three decades, most of the studies have focused on majority students, or minority students in the United States (Bingham & Okagaki, 2012). In the United States, ethnic minorities often have an African, Asian, or Hispanic background, whereas many ethnic minorities in Western-European countries have Turkish or Moroccan backgrounds. Ethnic heterogeneity is more common and accepted in immigrant countries such as the United States than in European countries, in which there is a historically large native majority population (Thijs & Verkuyten, 2014). As a result, ethnic minorities in West-Europe might differ from ethnic minorities in the United States in their experience of being an ethnic minority in a specific country, which might affect their sense of belongingness and classroom engagement (Thijs & Verkuyten, 2014).

As suggested by the contextual risk and resilience perspective (Motti-Stefanidi & Masten, 2013), several factors in the school context might explain adaptive or maladaptive classroom engagement trajectories. However, few longitudinal studies investigated multiple aspects of the classroom context in relation to the classroom engagement of ethnic minorities and majorities. This longitudinal study addresses this gap by focusing on the role of ethnic classroom composition, teacher support, and peer norms in shaping trajectories of adolescents' classroom engagement. In addition, this study examines possible differences between ethnic minorities and majorities in the role of the classroom context.

#### *Ethnic classroom composition and adolescents' classroom engagement*

There are multiple ways to examine ethnic diversity in the classroom. For instance, using the proportion of ethnic majority (e.g., Verkuyten & Thijs, 2002) or minority students (e.g., Vervoort, Scholte, & Overbeek, 2010), which reflects the degree of intergroup contact of minorities with majorities. Or using the Blau (1977) heterogeneity index, representing the number of different ethnic groups in combination with their relative proportions in the classroom (e.g., Juvonen, Nishina, & Graham, 2006). This heterogeneity index reflects whether students are surrounded by co-ethnics (i.e., ethnically consonant context) or by other-ethnics (i.e., ethnically dissonant context) (Thijs, Verkuyten, & Grundel, 2014).

Research on ethnic classroom composition and engagement is scarce and has produced mixed findings, reflecting differences in operationalization of ethnic diversity and engagement, and ethnic background (Rjosk, Richter, Lüdtke, & Eccles, 2017). Focusing on relative proportions of minorities versus majorities, it has been argued that adolescents in schools with higher ethnic minority presence share their disadvantaged position and feelings of futility, which hampers their classroom engagement (Demanet & Van Houtte, 2011). Moreover, in classrooms with larger proportions of ethnic minorities, adolescents may disengage more from the mainstream culture, which may negatively affect their engagement in school (Schachner, Noack, Van de Vijver, & Eckstein, 2016). Indeed, Finn and Voelkl (1993) found that higher proportions of minority students at school were associated with lower levels of behavioral engagement for all students (i.e., African American, Hispanic, and White students). Other studies revealed that especially ethnic minorities in classrooms with higher proportions of ethnic majorities benefit from intercultural contact and social

integration with majorities, which could positively affect their adjustment and engagement in school (Baysu, Phalet, & Brown, 2014; Schachner et al., 2016).

However, there is also some evidence that higher proportions of ethnic minorities in the classroom protect the academic self-esteem of minority students. It has been theorized that ethnic minorities might hold more 'optimistic' beliefs about schooling, with higher aspirations and more positive school beliefs, especially in schools with a high ethnic minority concentration (Goldsmith, 2004; Van Houtte & Stevens, 2010). Through the process of social comparison, ethnic minority students at ethnically diverse schools generally compare themselves and their situation with other ethnic minorities, resulting in more positive views about themselves and pro-school attitudes (e.g., Demanet & Van Houtte, 2011; Demanet & Van Houtte, 2014; Frost, 2007). Consistent with this notion, there is some evidence showing that ethnic minorities (i.e., African American, Asian American) were more likely to have higher levels of behavioral engagement (Johnson et al., 2001) and emotional engagement (Voelkl, 1997; Wang & Eccles, 2012) over time compared to their majority peers. In line with this, Demanet and Van Houtte (2014) found that higher proportions of ethnic minorities in Belgian secondary schools were associated with lower behavioral and emotional disengagement (i.e., school misconduct and lack of school membership) levels for all students, but especially for ethnic minorities. Building on this existing work, we focused on ethnic diversity at the classroom level as a more proximal measure of intergroup contact, and classroom engagement as a proximal predictor of the achievement gap between ethnic minorities and majorities.

Focusing on ethnic heterogeneity and classroom engagement, prior research has suggested that for ethnic minorities (i.e., Latino and African American), attending more ethnically heterogeneous classrooms could stimulate the self-worth and perceived school safety (Juvonen et al., 2006) and provide access to social resources (i.e., teacher support) (Garcia-Reid, 2007), which could also positively affect their engagement in school. However, some students may have difficulty making friends and developing a sense of belonging in more ethnically heterogeneous classrooms, which may negatively affect their engagement in school (Johnson et al., 2001).

Thus far, including both measures of ethnic classroom composition (i.e., proportion score and heterogeneity index) is scarce in the field of classroom engagement research (Schachner et al., 2016). This study aims to address this gap by using both proportion scores of majority students and the heterogeneity index, and aims to disentangle these ethnic classroom composition effects. Drawing on the findings of the positive effect of majority's presence and ethnic heterogeneity in the classroom on the adolescents' engagement, we postulated that higher proportions of majorities and more ethnic heterogeneity contribute to adolescents' behavioral and emotional engagement. Moreover, we tentatively expected that especially ethnic minorities benefit more from higher proportions of minorities and more ethnic diversity in the classroom.

#### *Teacher support and adolescents' classroom engagement*

Following an attachment perspective on teacher-student relationships (Verschuere & Koomen, 2012), emotionally supportive teachers can stimulate students' behavioral and emotional development (Hamm & Hoffman, 2016; Hamre & Pianta, 2001; Roorda, Jak, Zee, Oort, & Koomen, 2017; Roorda, Koomen, Spilt, & Oort, 2011). By creating warm, positive, and respectful emotional connections, and demonstrating sensitivity to students' needs and regard for their perspectives (Hamm & Hoffman, 2016), teachers provide a secure base that student can use to explore the learning environment and engage in learning activities (Bergin & Bergin, 2009; Hamre & Pianta, 2001; Roorda et al., 2011; Roorda et al., 2017; Verschuere & Koomen, 2012). The role of teacher-student relationships on students' adjustment in school appears to have long-term effects. For instance, Hamre and Pianta (2001) found

that negative relationships (i.e., conflict) with teachers in kindergarten predicted students' grades, work habits, and disciplinary infractions in both lower and upper elementary school. Also during adolescence, teachers remain important for engaging students in school (e.g., Bergin & Bergin, 2009; Roorda et al., 2011; Roorda et al., 2017). In secondary school, however, establishing emotionally supportive teacher-student relationships may be more challenging than during earlier ages, as students often have multiple teachers. Nevertheless, it is possible that because of adolescents' decreasing engagement trajectories, positive relationships with teachers are more important for students' engagement in secondary school than in primary school (e.g., Roorda et al., 2017).

The academic risk hypothesis has asserted that at-risk students (e.g., from an ethnic minority or low socio-economic status background) may benefit more from supportive teacher-student relationships than other students as these students have more "to gain or lose, through their ability to adapt to the social environment of the classroom" (Hamre & Pianta, 2001, p. 627). Indeed, studies have shown that supportive teacher-student relationships are more important for ethnic minorities and students with a low-socioeconomic status than other students (Burchinal, Peisner-Feinberg, Pianta, & Howes, 2002; Ewing & Taylor, 2009; Hamre & Pianta, 2001; Meehan, Hughes, & Cavell, 2003), and protect their engagement in school (Garcia-Reid, 2007). However, other studies found no support for this notion, suggesting that supportive relationships are equally important for the engagement of ethnic minorities and majorities (Hughes, Luo, Kwok, & Loyd, 2008). In a meta-analysis, Roorda et al. (2011) found that the association between positive teacher-student relationships and achievement was stronger for ethnic minorities; such differential effects were not found on negative teacher-student relationships and engagement. Based on prior research, we expected a positive association between teacher support and students' behavioral and emotional engagement, and we tentatively expected that ethnic minorities benefit more from supportive teachers compared to their majority peers.

#### *Peer norms and adolescents' classroom engagement*

Peer norms are the prevailing behaviors and dispositions in the peer group (Farmer, McAuliffe Lines, & Hamm, 2011). During adolescence, the peer group and prevailing norms within the peer group become increasingly important, and help them to define their identity, attitudes, and behaviors (Veenstra, Dijkstra, & Kreager, 2018). Adolescents are susceptible to conform to these group norms in order to fit in (Prinstein & Dodge, 2008), as being accepted by peers and feeling belonged is important to them (Tarrant et al., 2001). As group norms can assert a certain pressure to behave in a certain way (Ajzen, 1991), it is likely that they affect adolescents' own behaviors and attitudes.

Peer norms can be descriptive, reflecting the actual behavior in a group and can be operationalized as the average behavior of all students in a classroom (Deutsch & Gerard, 1955). Descriptive norms can affect individual behavior as these inform a person about what others typically do and, consequently, provide decisional shortcuts when a person is choosing how to behave in a given situation (Cialdini, Kallgren, & Reno, 1991). Moreover, descriptive norms represent concrete behaviors and thus, provide opportunities for observational learning and modeling (Bandura, 1977).

Nevertheless, it is unlikely that all peers are equally influential, as peer relations are organized in terms of social status with popular adolescents being more powerful (Adler & Adler, 1995), more attractive for affiliation (Dijkstra, Cillessen, & Borch, 2013), and more influential than other peers (Adler, Kless, & Adler, 1992). Conforming to the behaviors of popular peers might increase students' own popularity directly or via affiliation with high-status peers (Dijkstra, Cillessen, Lindenberg, & Veenstra, 2010). Therefore, social influence might be driven more by behaviors and attitudes of popular adolescents than all peers. Popularity norms reflect the "extent to which certain behaviors



in a classroom are associated with high social status" (Shin, 2017, p. 310). Thus, whereas descriptive norms place equal weights on the behavior of all peers, popularity norms account for potential differences in influence among peers by weighting the impact of certain behaviors or attitudes by means of the status of adolescents (Dijkstra & Gest, 2015). As such, popularity norms are measured using the within-classroom correlation between status and behaviors or attitudes (Henry et al., 2000).

To date, research on peer norms has almost exclusively focused on aggressive or risky behaviors, and is scarce regarding academic behaviors (Barth et al., 2004; Shin, 2017; Veenstra et al., 2018). Research in this field suggested that levels of bullying were higher in classrooms where bullying was associated with popularity than in classrooms where bullying was associated with non-popularity (Dijkstra, Lindenberg, & Veenstra, 2008). Similarly, Müller, Hofmann, Fleischli, and Studer (2016) showed that perceived disruptive behavior in the classroom predicted adolescents' own disruptive behavioral development within the seventh grade. Furthermore, middle school students who associated aggressive behavior with high social status in the first semester were more likely to increase in their own aggressive behavior in the second year (Juvonen & Ho, 2008). In addition, research revealed that students in primary classrooms that endorse aggressive behaviors are more likely to influence each other and display higher levels of aggressive behavior over time (Kellam, Ling, Merisca, Brown, & Lalongo, 1998; Mercer, McMillen, & DeRosier, 2009; Sentse, Scholte, Salmivalli, & Voeten, 2007). In general, the higher the correlation between behaviors and social status or the greater the prevalence of behaviors in the classroom, the more likely individual students believe that engaging in these behaviors is normative and legitimate (Shin, 2017).

To date, only a few longitudinal studies have examined the relation between descriptive classroom engagement norms and students' individual engagement. For instance, a study by Kindermann (2007) among sixth graders revealed that engagement in the peer group at the beginning of the school year was positively associated with increases in teacher-rated engagement at the end of the school year. In addition, Barth et al. (2004) found that classroom levels of poor academic focus (e.g., students not completing assignments) predicted increases in poor academic focus of individual students in the fourth and fifth grade. These studies suggest that high classroom-levels (i.e., descriptive norms) of engagement can promote students' own engagement. Building on these studies, we further disentangle adolescents' classroom engagement to determine whether descriptive norms affect adolescents' behavioral and emotional engagement in a similar manner during upper secondary school.

Regarding popularity norms, previous research suggested that fifth and sixth graders increased in their level of engagement when this was positively associated with popularity in their classroom (Shin, 2017). This is also supported by evidence from social network research, which indicated that the academic engagement of popular peers predicted students' own engagement during the seventh grade (Zhang et al., 2019), and that adolescents' became more similar to the average behavioral engagement level (i.e. truancy) of the peers they liked most between Grade 10 and 11 (Wang, Kiuru, Degol, & Salmela-Aro, 2018). Based on previous research, we tentatively expected to find a positive effect of positive descriptive norms and popularity norms on adolescents' engagement, but especially for behavioral engagement as this dimension is considered to be more visible for peers compared to emotional engagement.

In line with the risk and resilience perspective, it could be that especially ethnic minorities may benefit more from peer contexts that promote engagement, as their engagement may be more contingent on contextual affordances (Motti-Stefanidi & Masten, 2017). Indeed, there is some evidence supporting that ethnic minorities (i.e., African American) are more susceptible to peer influences compared to their majority peers (i.e., European American) (Baysu & Phalet, 2012; Wang

& Eccles, 2012). Therefore, we tentatively hypothesized stronger associations between peer norms and engagement for ethnic minorities.

### *Interplay between teacher support and peer norms*

Following developmental systems theories, adolescents' classroom engagement is not only affected by proximal social relationships with teachers and peers, but also by the interconnection between teachers and peers (Bronfenbrenner & Morris, 2006). However, the extent to which teachers and peers can jointly affect adolescents' classroom engagement trajectories remains relatively understudied (Ruzek et al., 2016). Yet, it has been generally suggested that teachers' capacity to motivate students' classroom engagement requires peer contexts that align with, rather than conflict or compete with, teachers' efforts (Hamm & Hoffman, 2016). Therefore, it is expected that teacher support and peer norms that promote engagement, both descriptive and popularity norms, have a reinforcing positive effect on adolescents' engagement trajectories. This interplay may be especially strong for adolescents' behavioral engagement as this is more visible for teachers and peers compared to their emotional engagement. However, in combination with low engagement peer norms, high teacher support may have a less strong or even negative effect resulting in less favorable engagement trajectories. Consequently, we hypothesized that adolescents have the most beneficial engagement trajectories with high teacher support and aligning classroom norms (high engagement norms), and less beneficial trajectories in non-aligning classrooms (high teacher support with low engagement norms, and vice versa).

### *The current study*

This longitudinal study focused on Grades 9, 10, and 11, and investigated three important aspects of the classroom context in an ethnically diverse adolescent sample: (a) the level of teacher support, (b) prevailing peer norms regarding engagement (i.e., descriptive and popularity norms), and (c) the ethnic classroom composition (i.e., ethnic heterogeneity and proportion of majorities). We focused on students in grades 9 to 11, as students' engagement is generally the lowest toward the end of secondary school (e.g., Wang & Eccles, 2012). Furthermore, in Belgium (where this study was conducted) students have to choose an educational track between Grade 8 and 9, which could be accompanied with an increased workload and emphasis on grades (Salmela-Aro, 2017). Consequently, students may face adjustment problems, which makes Grades 9 to 11 an important period for detecting signs of maladjustment. In addition, classes in upper secondary education are generally more stable in these grades, which was necessary for the peer nominations.

We hypothesized that more teacher support promotes adolescents' behavioral and emotional engagement trajectories (Hypothesis 1a; Roorda et al., 2017; Roorda et al., 2011). Although prior research was inconsistent, we tentatively expected stronger associations between teacher support and students' engagement for ethnic minorities based on the academic risk hypothesis (Hypothesis 1b; Burchinal et al., 2002; Ewing & Taylor, 2009; Hamre & Pianta, 2001; Meehan et al., 2003; Roorda et al., 2011). Furthermore, we hypothesized that peer norms that endorse engagement, both descriptive (Hypothesis 2a) and popularity (Hypothesis 2b) norms, positively impacts students' own engagement (Dijkstra & Gest, 2015; Kindermann, 2007; Shin, 2017), but especially behavioral engagement. Based on prior research (Wang & Eccles, 2012), we tentatively expected that ethnic minorities benefit more from peer norms that promote engagement compared to ethnic majorities (Hypothesis 2c). Further, we hypothesized that higher proportions of ethnic majorities (Hypothesis 3a; Demanet & Van Houtte, 2014) and more ethnic heterogeneity (Hypothesis 3b; Juvonen et al., 2006; Schachner et al., 2016) in the classroom contribute to students' behavioral and emotional engagement. Although prior research was scarce, we tentatively expected that especially ethnic minorities benefit

more from higher proportions of minorities and more ethnic diversity in the classroom in shaping their behavioral and emotional engagement (Hypothesis 3c; [Demanet & Van Houtte, 2014](#)). Finally, we hypothesized that teacher support and peer norms that promote engagement, rather than discourage engagement, have a reinforcing positive effect on adolescents' engagement trajectories (Hypothesis 4; [Hamm & Hoffman, 2016](#)). We tentatively expected the interplay to be stronger for students' behavioral engagement, as this is more visible for teachers and peers compared to their emotional engagement.

## Method

### Procedure

This study is part of the Leuven CILS project (i.e., Children of Immigrants Longitudinal Study for Flanders), which aims to examine socio-cultural processes in the school context that may explain the achievement gap between minority and majority students. An accelerated longitudinal design was used in which data are collected from multiple single cohorts, each one starting at a different grade in secondary school. Specifically, Wave 1 consists of students in Grades 7, 8, and 9, Wave 2 covers Grades 8, 9, and 10, and Wave 3 represents Grades 9, 10 and 11.

Schools were randomly stratified based on their ethnic composition using administrative data on foreign languages spoken at home. After obtaining ethical clearance by the school principal, and receiving parental and teacher consent, all eligible students who were in Grade 7, 8 or 9 at the start of the study participated (70 schools, 431 classes). Each spring, students were asked to complete questionnaires during class hours. All participants were informed about the intention of the study prior to the data collection and were reminded of their right to opt out at the start of the class sessions. The Social and Societal Ethics Committee at KU Leuven approved the study (G-2015.01.146).

### Participants

We focused on adolescents from Grades 9 to 11 ( $N = 2037$ ), because the end of secondary school is a critical developmental period in which adolescents' engagement is generally the lowest (e.g., [Engels, 2018](#); [Wang & Eccles, 2012](#)). Moreover, during this period, adjustment problems may arise due to increased workload and emphasis on grades ([Salmela-Aro, 2017](#)). In addition, between school years, upper secondary education classes are generally more stable in these grades, which was necessary for the peer nominations. Within school years, Belgian students are assigned to a class group with whom they interact and take courses throughout the school year.

For this study, a subsample was used in order to ensure reliable and valid peer nominations (i.e., at least 60% of the classmates had to participate in the peer nomination procedure; [Marks, Babcock, Cillessen, & Crick, 2013](#)), and ensure that classrooms were sufficiently large (i.e., at least five students). The subsample consisted of 730 students from 47 schools and 85 classrooms. Of the participants, 647 participated at Wave 1 (Grade 9), 723 at Wave 2 (Grade 10), and 725 at Wave 3 (Grade 11), indicating that we had drop-ins in Grade 10 and 11. The vast majority of participants participated at all three waves (i.e., 88.4% versus 11.6% who missed one of the three waves).

Participants were on average 15.6 years old at Wave 1 ( $SD = 0.8$ ; range 13.8–20.5 years) with 42.9% boys. Most participants were born in Belgium (89.0%). Nevertheless, approximately half of the participants (43.7%) had a minority background, indicating that the adolescent and/or his/her parents were born outside Belgium or neighboring countries. Ethnic minorities were predominantly from Morocco (11.2%) and Turkey (11.1%), and to a lesser extent Poland (0.4%), Italy (0.4%), and other countries (12.9%). Most students lived in intact families (78.6%). Higher education was completed by 33.8% of the mothers and 27.9% of the fathers. The composition of our sample did not deviate

notably from other random samples of ethnic minority students in Flanders-Belgium in terms of heterogeneity, sex, immigrant background, family composition, and parental education level (e.g., [Phalet, Deboosere, & Bastiaenssen, 2007](#)).

Reflecting the stratified sampling design which oversampled schools with a higher ethnic minority presence, schools in the subsample varied considerably in terms of the percentages of ethnic minority students: 30.0% of the schools had between 0 and 10% ethnic minorities, 33.3% had between 10 and 30% ethnic minorities, 20.0% had between 30 and 60% ethnic minorities, and 16.7% had more than 60% ethnic minorities.

### Measures

#### Classroom engagement

A shortened version of the Student Report on Engagement Versus Disaffection with Learning ([Skinner, Kindermann, & Furrer, 2008](#)) was used to assess behavioral (3 items) and emotional (3 items) engagement in the classroom in Grades 9 to 11. Items were selected based on the highest factor loadings in another large-scale longitudinal research project in Belgium (i.e., STRATEGIES project). Adolescents answered items on a 5-point scale, ranging from 1 (*completely true*) to 5 (*not true at all*). Items for behavioral engagement were “I work as hard as I can in class”, “I listen carefully during class”, and “I pay attention in class”. Items for emotional engagement were “I like to learn new things in class”, “I feel good in class”, and “I like to be in class”. Prior research on these scales revealed good internal reliability and validity ([Engels et al., 2017](#); [Fredricks & McColskey, 2012](#)). In this study, internal reliability of both subscales was good (behavioral engagement: Grade 9  $\alpha = 0.82$ , Grade 10  $\alpha = 0.81$ , and Grade 11  $\alpha = 0.82$ ; emotional engagement: Grade 9  $\alpha = 0.67$ , Grade 10  $\alpha = 0.71$ , and Grade 11  $\alpha = 0.69$ ). Items were recoded so that higher values reflect higher levels of classroom engagement.

#### Teacher support

Students' perceived teacher support was measured in Grade 9 based on the teacher affiliation subscale from the People In My Life questionnaire ([Cook, Greenberg, & Kusche, 1995](#)). Items were selected with the highest factor loadings in a prior research project (i.e., STRATEGIES). Adolescents answered three items on a 5-point scale ranging from 1 (*always*) to 4 (*never*). Items were related to how often students experience that teachers encourage and understand them, and have attention for them. Items were “How often do you experience that your teachers... “encourage you at school”, “understand you”, and “have attention for you” (Grade 9  $\alpha = 0.75$ ). Prior research revealed good internal consistency and validity ([De Laet et al., 2016b](#); [Murray & Greenberg, 2000](#)). Items were recoded so that higher values reflect higher levels of teacher support. Teacher support was used as a time-invariant predictor in our analyses. In line with other research in secondary school (e.g., [Crosnoe, Johnson, & Elder Jr., 2004](#); [You, Hong, & Ho, 2011](#)), teacher support was operationalized as a general measure of the teaching climate. Consequently, possible teacher changes over time are assumed to have less effect than when using a measure of individual teacher-student relationships.

#### Descriptive norms

Descriptive norms for behavioral and emotional engagement were computed for Grade 9 by using the aggregated average score of behavioral and emotional engagement across all students in the class (cf. [Dijkstra & Gest, 2015](#)). Descriptive norms for behavioral engagement ranged between 2.67 and 4.67 ( $M = 3.63$ ,  $SD = 0.32$ ), and for emotional engagement between 2.67 and 4.52 ( $M = 3.72$ ,  $SD = 0.31$ ) on a scale from 1 to 5.

#### Popularity norms

Popularity norms for behavioral and emotional engagement were

computed in Grade 9 by calculating the correlation between popularity and engagement per classroom (cf. Dijkstra & Gest, 2015). Popularity was assessed with peer nominations, by asking participants to nominate the 'most popular students in class' (Cillessen, 2009). Participants could nominate up to five students. The scores for popularity norms were on average  $r = -0.22$  ( $SD = 0.39$ ) for behavioral engagement (range  $-0.88$  to  $0.83$ ) and  $r = 0.01$  ( $SD = 0.42$ ) for emotional engagement (range  $-0.89$  to  $0.85$ ).

#### Ethnic minority status

Students' ethnic minority status was assigned using student reports on their own and/or their parents' birth country with 1 = Belgium, 2 = the Netherlands, 3 = France, 4 = Italy, 5 = Turkey, 6 = Morocco, 7 = Poland, and 8 = other. These other countries included Morocco ( $n = 81$ ), Turkey ( $n = 80$ ), Italy ( $n = 3$ ), Poland ( $n = 3$ ), and not further specified ( $n = 93$ ). An independent-samples  $t$ -test indicated no significant differences between students with a Belgian background and students with a Dutch background in the engagement or teacher support variables. Therefore, students and/or their parents who were born in Belgium or in the two major neighboring countries (Netherlands,  $n = 18$ ; and France,  $n = 1$ ) were categorized as ethnic majorities (1 = majority), whereas students who were born in any other country, or whose parents were born in other countries, were categorized as ethnic minorities (0 = minority) (cf. Celeste, Meeussen, Verschueren, & Phalet, 2016).

#### Proportion of majorities

The proportion of ethnic majorities in the classroom was calculated based on students' ethnic minority status, reflecting the relative percentage of ethnic majorities in the classroom. On average, the proportion of majorities in the classroom was 0.56 in Grade 9 ( $SD = 0.33$ ; range 0.00 to 1.00).

#### Ethnic heterogeneity

Ethnic heterogeneity was measured using Blau's Index (Blau, 1977), which is a commonly used index to operationalize diversity (Solanas, Selvam, Navarro, & Leiva, 2012). This index represents the probability that two randomly chosen students within a classroom have different ethnic backgrounds. Blau's index is calculated by adding the squared proportion of individuals in each category (i.e., add the squared proportion of Moroccans, to the squared proportion of Turkish, to the squared proportion of ethnic majorities, etc.) and then subtracting this from 1. This index ranges from 0 (complete homogeneous in terms of ethnic composition) to 1 (complete heterogeneous in terms of ethnic composition). On average, the ethnic heterogeneity index was 0.75 in Grade 9 ( $SD = 0.20$ ; range 0.00 to 0.97).

#### Socio-economic status

Due to very high levels of ethnic segregation in the highly stratified Belgian education system (Baysu et al., 2014), we controlled for students' socio-economic status (SES). SES was measured using the average educational level of students' parents. Students reported whether their mother and/or father had completed primary education (coded as 1), high school (coded as 2), and/or higher education/university (coded as 3). On average, SES was 2.08 in Grade 9 ( $SD = 0.64$ ; range 0.50 to 3.00).

#### Statistical analysis

First, measurement invariance for behavioral and emotional engagement, and teacher support was tested to examine whether the same constructs were measured over time and for ethnic minorities and majorities. Subsequently, to account for the nested structure of the data and the inclusion of classroom variables, three-level models were estimated with time (Level-1) nested in students (Level-2) nested within classes (Level-3). Multilevel growth curve models were computed separately for behavioral and emotional engagement using MLwiN 3.01

(Charlton, Rasbash, Browne, Healy, & Cameron, 2017). First, empty three-level models (i.e., a model with no predictors; Model 1) were specified to investigate the amount of variance in behavioral and emotional engagement at the lowest level (time), student-level, and class-level. Second, baseline models (Model 2) were estimated including the effect of time (coded as 0, 1, and 2; one unit is approximately one year) to model changes in students' behavioral and emotional engagement over time. In case of significant variation at student and/or class-level ( $p < .05$ ), we allowed the effect of time to vary across students/classes, by specifying time (i.e. slope) as a random term. Third, student-level predictors were added to the baseline model to investigate whether individual variables predict students' intercept and slope (i.e., interaction between predictor and time) of behavioral and emotional engagement (Model 3). Student-level predictors were students' sex, SES, ethnic minority status, and the level of perceived teacher support. Fourth, class-level predictors were added to the student-level model to examine whether classroom variables predict students' intercept and slope of behavioral and emotional engagement (Model 4). Class-level predictors were the descriptive and popularity engagement norms, proportion of ethnic majorities and ethnic heterogeneity in the classroom. Additionally, we examined whether differences existed between ethnic minorities and majorities in the association between the predictors and the intercept and slope of classroom engagement. By doing so, we added all interactions between ethnic minority status and the predictor variables to the model. Furthermore, the interplay between teacher support and peer norms was investigated by adding four interaction effects to the model: (a) teacher support and descriptive norms, (b) teacher support and popularity norms, (c) teacher support, descriptive norms, and time, and (d) teacher support, popularity norms, and time.

All student-level predictors (Level-2) were group-mean centered (the predictor mean for the classroom that the student attends is subtracted from the predictor scores for each student within that classroom) and all classroom-level predictors (Level-3) variables were grand-mean centered (the sample mean is subtracted from each student's predictor score) (cf. Peugh, 2010). To provide a measure of the magnitude of the effect, effect sizes (ES) were calculated for significant effects using the following formula:  $(2 \times \text{unstandardized regression coefficient } (B) \times SD_{\text{predictor}}) / SD_{\text{outcome}}$  (cf. Marsh et al., 2009; Wouters, Colpin, Van Damme, & Verschueren, 2015). Values  $\leq 0.20$  refer to small effects,  $> 0.20$  and  $\leq 0.50$  to medium effects, and  $\geq 0.80$  to large effects. A positive ES denotes a positive effect, whereas a negative ES indicates a negative effect. Furthermore, Little's MCAR was significant,  $\chi^2(159) = 252.59$ ,  $p < .001$ . However, as Chi-square is sensitive to sample size, we assessed the normed Chi-square (i.e.,  $\chi^2/df = 1.59$ ), which is considered acceptable at less than 2 (cf. Nelemans et al., 2019). This suggests that the data were missing at random. Missing data were handled with full information maximum likelihood, which utilizes all observed variables for each participant.

## Results

### Measurement invariance

To examine whether the factorial structure of behavioral and emotional engagement, and teacher support holds across waves (only for the engagement variables) and ethnic groups (engagement and teacher support variables), multigroup confirmatory factor analyses were conducted (see supplemental material for details). Following Chen (2007), metric invariance was established if  $\Delta CFI$ ,  $\Delta RMSEA$ , and  $\Delta SRMR$  were below 0.010, 0.015, and 0.030, respectively. Scalar invariance was assessed if these indices were below 0.010, 0.015, and 0.010, respectively. For classroom engagement, scalar invariance was established across waves and between ethnic minorities versus majorities. Scalar invariance was also established between ethnic minorities and majorities for teacher support. These results suggest that

**Table 1**  
Means and standard deviations of the study variables.

	Mean (SD)	Min.	Max.
Behavioral engagement			
Grade 9	3.63 (0.66)	1	5
Grade 10	3.50 (0.64)	1	5
Grade 11	3.47 (0.66)	1	5
Emotional engagement			
Grade 9	3.72 (0.69)	1	5
Grade 10	3.63 (0.68)	1	5
Grade 11	3.58 (0.61)	1	5
Sex <sup>1</sup>	0.57 (0.50)	0	1
SES	2.08(0.64)	1	3
Minority status <sup>2</sup>	0.44 (0.50)	0	1
Teacher support Grade 9	2.71 (0.60)	1	4
Peer norms			
Descriptive norms Grade 9			
Behavioral engagement	3.63 (0.32)	1	5
Emotional engagement	3.72 (0.31)	1	5
Popularity norms Grade 9			
Behavioral engagement	- 0.22 (0.39)	0	1
Emotional engagement	0.01 (0.42)	0	1
Ethnic heterogeneity Grade 9	0.75 (0.20)	0	1
Proportion of majorities Grade 9	0.56 (0.33)	0	1

Note. <sup>1</sup>Boy = 0, Girl = 1. <sup>2</sup>Minority = 0, Majority = 1.

classroom engagement has equivalent meaning over time. Moreover, the meaning of classroom engagement and teacher support is equivalent for ethnic minorities and majorities.

#### Descriptive statistics

Means and standard deviations are presented in Table 1. Mean-levels of behavioral and emotional engagement decreased between Grade 9 and 11. In Grade 9, students reported moderate levels of teacher support. Moreover, descriptive norms of behavioral and emotional engagement were rather high, and slightly higher for emotional engagement than behavioral engagement. The average correlation between popularity and behavioral engagement was negative, implying that being behaviorally engaged in school is associated with lower levels of popularity. For emotional engagement, the average correlation approximated zero, indicating that being emotionally engaged in school is not related to popularity. The standard deviations of the peer norms denoted that the values of peer norms are, on average, close to the sample mean. Furthermore, classrooms in our sample were generally high in ethnic heterogeneity. Also, classrooms were predominantly majority-minority intergroup contexts (i.e., proportion of majorities is relatively large compared to proportion of minorities): 20.3% with less than 25% majorities, 15.4% between 25% and 50% majorities, 23.9% between 50% and 75% majorities, and 40.7% with more than 75% majorities.

Bivariate correlations are presented in Table 2. Behavioral and emotional engagement were relatively stable over time, as indicated by the cross-year correlations ( $r \geq 0.59$  and  $r \geq 0.44$ , respectively). Teacher support and descriptive norms were positively associated with behavioral and emotional engagement. Popularity norms were not significantly related to students' engagement. Ethnic heterogeneity in the classroom was negatively correlated with emotional engagement in Grade 9, and positively with behavioral engagement in Grade 11. Ethnic minorities generally had lower SES, reported higher levels of teacher support, and were in classrooms with high descriptive norms regarding engagement. Also, girls and ethnic minorities generally reported higher levels of engagement than boys or ethnic majorities, respectively.

#### Multilevel growth curve model

Multilevel growth curve models are presented in Tables 3 and 4 for

**Table 2**  
Correlations between the study variables.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Behavioral engagement G9	1															
2. Behavioral engagement G10	0.59**	1														
3. Behavioral engagement G11	0.51**	0.62**	1													
4. Emotional engagement G9	0.45**	0.28**	0.21**	1												
5. Emotional engagement G10	0.28**	0.40**	0.24**	0.44**	1											
6. Emotional engagement G11	0.28**	0.28**	0.42**	0.39**	0.51**	1										
7. Sex <sup>1</sup>	0.07	0.10**	0.17**	0.09*	0.10**	0.08*	1									
8. SES	-0.09*	-0.08	-0.06	0.02	-0.02	0.08*	-0.08	1								
9. Minority status <sup>2</sup>	-0.11**	-0.10**	-0.07	-0.14**	-0.10**	-0.10**	-0.08*	0.33**	1							
10. Teacher support G9	0.25**	0.19*	0.14**	0.43**	0.35**	0.28**	0.01	-0.02	0.07	1						
11. Descriptive norms Beh.Eng. G9	0.46**	0.30**	0.19**	0.27**	0.20**	0.12**	0.04	-0.19**	0.19**	0.18**	1					
12. Descriptive norms Emo.Eng. G9	0.28**	0.20**	0.12**	0.44**	0.27**	0.16**	0.08*	-0.09*	0.14**	0.28**	0.59**	1				
13. Popularity norms Beh.Eng. G9	0.02	0.02	0.02	-0.05	-0.02	-0.05	-0.10*	-0.09*	0.05	-0.06	0.06	0.06	1			
14. Popularity norms Emo.Eng. G9	-0.01	0.02	0.02	-0.06	-0.00	-0.00	0.02	-0.01	-0.01	-0.05	-0.02	-0.11**	-0.12**	1		
15. Ethnic heterogeneity G9	-0.01	0.02	0.10*	-0.08*	-0.05	-0.04	0.05	-0.13**	0.17**	-0.09*	0.01	-0.16**	-0.12**	0.07	1	
16. Proportion majorities G9	-0.12**	-0.14**	-0.08*	-0.10*	-0.17**	-0.11**	-0.14**	0.38**	-0.67**	-0.08*	-0.28**	-0.21**	-0.16**	0.02	-0.27**	1

Note. \*  $p < .05$ . \*\*  $p < .001$ . Beh.Eng = Behavioral engagement. Emo.Eng = Emotional engagement. G9 = Grade 9, G10 = Grade 10, G11 = Grade 11. <sup>1</sup>Boy = 0, Girl = 1. <sup>2</sup>Minority = 0, Majority = 1.



**Table 3**  
Multilevel latent growth curve models of behavioral engagement.

	Model 1: B(S.E.)	Model 2: B(S.E.)	Model 3: B(S.E.)	Model 4: B(S.E.)
<b>Behavioral Engagement</b>				
<i>Fixed effects</i>				
Intercept	3.52(0.02)***	3.66(0.04)***	3.73(0.08)***	3.69(0.07)***
Time		−0.07(0.01)***	−0.09(0.02)***	−0.13(0.03)***
Sex <sup>1</sup>			0.04(0.07)	0.04(0.07)
Sex*Time			0.06(0.03)*	0.06(0.03)*
SES			0.02(0.06)	0.01(0.06)
SES*Time			0.01(0.02)	0.01(0.02)
Minority Status <sup>2</sup>			−0.15(0.07)*	−0.03(0.09)
Minority Status*Time			−0.04(0.03)	0.02(0.04)
Teacher Support			0.28(0.06)***	0.30(0.06)***
Teacher Support*Time			−0.04(0.02)	−0.04(0.03)
Descriptive Norms				1.20(0.12)***
Descriptive Norms*Time				−0.26(0.05)***
Popularity Norms				−0.01(0.08)
Popularity Norms*Time				0.00(0.04)
Ethnic Heterogeneity				−0.26(0.16)
Ethnic Heterogeneity*Time				0.16(0.07)*
Proportion Majorities				−0.03(0.14)
Proportion Majorities*Time				−0.01(0.06)
<i>Random effects</i>				
Level 3 Intercept	0.03(0.01)*	0.01(0.03)**	0.09(0.03)**	0.00(0.00)
Level 3 Time		0.01(0.00)*	0.01(0.00)	0.00(0.00)
Level 2 Intercept	0.22(0.02)***	0.27(0.05)***	0.26(0.05)***	0.20(0.04)***
Level 2 Time		0.02(0.01)**	0.02(0.01)**	0.02(0.01)*
Level 1 Intercept	0.19(0.01)***	0.16(0.01)***	0.15(0.01)***	0.15(0.01)***
Deviance	3583.47	3510.41	3006.27	2557.92
Parameters	4	9	17	25
Cases used	2102 of 2190	2102 of 2190	1854 of 2190	1648 of 2190

Note. Model 2 includes Level-1 predictors (time), Model 3 adds Level-2 predictors (student-level; Sex, SES, minority status, teacher support), and Model 4 adds Level-3 predictors (class-level; Descriptive norms, popularity norms, ethnic heterogeneity, proportion majorities). \*  $p < .05$ . \*\*  $p < .01$ . \*\*\* $p < .001$ . <sup>1</sup> Reference group = Boys. <sup>2</sup> Reference group = Ethnic minorities.

**Table 4**  
Multilevel latent growth curve models of emotional engagement.

	Model 1: B(S.E.)	Model 2: B(S.E.)	Model 3: B(S.E.)	Model 4: B(S.E.)
<b>Emotional Engagement</b>				
<i>Fixed effects</i>				
Intercept	3.64(0.02)***	3.79(0.04)***	3.87(0.07)***	3.85(0.07)***
Time		−0.07(0.01)***	−0.06(0.02)*	−0.13(0.03)***
Sex <sup>1</sup>			0.11(0.07)	0.01(0.07)
Sex*Time			−0.00(0.03)	0.01(0.03)
SES			0.14(0.06)*	0.12(0.06)*
SES*Time			−0.03(0.03)	−0.02(0.03)
Minority Status			−0.24(0.07)***	−0.20(0.09)*
Minority Status*Time			−0.05(0.03)	0.09(0.04)*
Teacher Support			0.47(0.06)***	0.46(0.06)***
Teacher Support*Time			−0.06(0.03)*	−0.06(0.03)*
Descriptive Norms				1.27(0.13)***
Descriptive Norms*Time				−0.33(0.06)***
Popularity Norms				0.03(0.08)
Popularity Norms*Time				−0.01(0.03)
Ethnic Heterogeneity				−0.02(0.17)
Ethnic Heterogeneity*Time				−0.05(0.08)
Proportion Majorities				−0.27(0.15)
Proportion Majorities*Time				−0.18(0.06)**
<i>Random effects</i>				
Level 3 Intercept	0.02(0.01)*	0.02(0.01)*	0.02(0.01)*	0.00(0.00)
Level 3 Time		−	−	−
Level 2 Intercept	0.17(0.02)***	0.30(0.06)***	0.18(0.05)***	0.09(0.05)
Level 2 Time		0.02(0.01)	0.01(0.01)	0.00(0.01)
Level 1 Intercept	0.25(0.01)***	0.23(0.01)***	0.22(0.01)***	0.22(0.01)***
Deviance	3869.44	3834.06	3215.51	2722.70
Parameters	4	7	15	23
Cases used	2103 of 2190	2103 of 2190	1855 of 2190	1648 of 2190

Note. Model 2 includes Level-1 predictors (time), Model 3 adds Level-2 predictors (student-level; Sex, SES, minority status, teacher support), and Model 4 adds Level-3 predictors (class-level; Descriptive norms, popularity norms, ethnic heterogeneity, proportion majorities). \*  $p < .05$ . \*\*  $p < .01$ . \*\*\* $p < .001$ . <sup>1</sup> Reference group = Boys. <sup>2</sup> Reference group = Ethnic minorities.

behavioral and emotional engagement, respectively. First, Model 1 for behavioral engagement revealed that 44% of the variance in behavioral engagement lies between measurements ( $0.19/(0.03 + 0.22 + 0.19) = 0.44$ ), 51% of the variance lies between students ( $0.22/(0.03 + 0.22 + 0.19) = 0.51$ ), and 6% of the variance lies between classrooms ( $0.03/(0.03 + 0.22 + 0.19) = 0.06$ ). Model 1 for emotional engagement showed that 57% of the variance in emotional engagement lies between measurements ( $0.25/(0.02 + 0.17 + 0.25) = 0.57$ ), 68% of the variance lies between students ( $0.30/(0.02 + 0.17 + 0.25) = 0.68$ ), and 5% of the variance lies between classrooms ( $0.02/(0.02 + 0.17 + 0.25) = 0.05$ ).

Second, baseline models were estimated containing the intercept and effect of time on engagement (Model 2). These models showed significant improvement in fit compared to the empty models (behavioral engagement,  $\Delta\text{Deviance} (5) = 73.06, p < .001$ ; emotional engagement,  $\Delta\text{Deviance} (3) = 35.39, p < .001$ ). The baseline model for behavioral engagement – with the effect of time varying across students and classes – indicated a significant intercept ( $M = 3.66, p < .001$ ) and slope ( $D = -0.07, p < .001$ ). The baseline model for emotional engagement – with the effect of time randomized across students – revealed a significant intercept ( $M = 3.79, p < .001$ ) and slope ( $D = -0.07, p < .001$ ). The negative slopes of behavioral and emotional engagement denote that students significantly decreased in their behavioral and emotional engagement over time.

#### Student-level predictors of engagement

Student-level predictors were added to the baseline model, that is, sex, ethnic minority status, SES, and teacher support, as predictors of the intercept and slope of engagement (Model 3). These models showed significant improvement in fit compared to the baseline models for both types of engagement (behavioral engagement,  $\Delta\text{Deviance} (8) = 504.11, p < .001$ ; emotional engagement,  $\Delta\text{Deviance} (8) = 618.55, p < .001$ ). The student-level predictor models revealed a significant effect of sex on the slope of behavioral engagement, indicating that girls had significantly less steep decreases in behavioral engagement compared to boys ( $ES = 0.09$ ). We found no sex differences for the intercept of behavioral engagement or the intercept and slope of emotional engagement. Further, higher levels of SES were related to higher levels of emotional engagement in Grade 9 ( $ES = 0.30$ ), but were not associated with the intercept and slope behavioral engagement or the slope of emotional engagement. Furthermore, after controlling for SES, gender, teacher support, and peer norms, ethnic minorities reported more behavioral and emotional engagement in Grade 9 compared to ethnic majorities ( $ES = -0.23$  and  $-0.36$ , respectively). We found no effect of ethnic minority status on the slope of behavioral and emotional engagement. Consistent with Hypothesis 1a, more teacher support related to more behavioral and emotional engagement in Grade 9 ( $ES = 0.51$

and  $0.86$ , respectively). However, more teacher support was also predictive of slightly steeper decreases in emotional engagement over time ( $ES = -0.11$ ) and was unrelated to the slope of behavioral engagement.

#### Class-level predictors of engagement

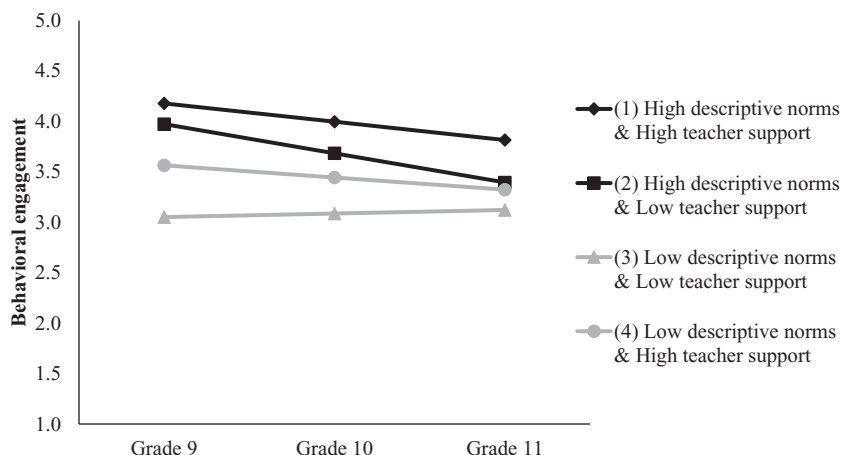
Class-level predictors of the intercept and slope of engagement were added to the model, that is, descriptive and popularity engagement norms, ethnic heterogeneity, and proportion of majorities (Model 4). By default, class-level variables cannot be random at their own level; therefore no random effect was added. These models showed significant improvement in fit compared to the previous models (behavioral engagement,  $\Delta\text{Deviance} (8) = 448.35, p < .001$ ; emotional engagement,  $\Delta\text{Deviance} (8) = 492.80, p < .001$ ). In partial support of Hypothesis 2a, we found that high descriptive norms regarding behavioral and emotional engagement positively affected students' own engagement in Grade 9 ( $ES = 1.15$  and  $1.18$ , respectively). However, higher classroom-levels of behavioral and emotional engagement were associated with steeper decreases in behavioral and emotional engagement over time ( $ES = -0.25$  and  $-0.31$ ). Not supporting Hypothesis 2b, popularity norms were unrelated to students' own behavioral and emotional engagement. Furthermore, failing to support Hypothesis 3a, higher proportions of ethnic majorities in the classroom were unrelated to students' behavioral engagement, or emotional engagement in Grade 9, yet it predicted steeper decreases in emotional engagement over time ( $ES = -0.18$ ). Further, as expected (Hypothesis 3b), more ethnic heterogeneity in the classroom was associated with less steep declines in behavioral engagement over time ( $ES = 0.10$ ). Yet, ethnic heterogeneity was unrelated to emotional engagement, nor did it predict the level of behavioral engagement in Grade 9.

#### Differences between ethnic minorities and majorities

To investigate whether the effects of the student- and class-level predictors of behavioral and emotional engagement are stronger for ethnic minorities than majorities, we added all possible interactions effects between ethnic minority status and the study variables to the model. Results of this moderation model revealed no significant differences between ethnic minorities and majorities, suggesting that these predictors (i.e., sex, socio-economic status, teacher support, peer norms, and ethnic classroom composition) are equally important in their classroom engagement trajectories. Therefore, we found no support for Hypothesis 1b, Hypothesis 2c, or Hypothesis 3c.

#### Interplay between teacher support and peer norms

Furthermore, we examined the interaction between teacher support and peer norms in shaping adolescents' classroom engagement. For behavioral engagement ( $\Delta\text{Deviance} (4) = 12.45, p = .014$ ), a



**Fig. 1.** Interaction Effect Between Teacher Support and Descriptive Norms on Behavioral Engagement Trajectories.

Note. Low refers to 1SD below the mean; High refers to 1SD above the mean. Simple slopes:

(1)  $\beta = -0.18, SE = 0.04, p < .001$ ; (2)  $\beta = -0.24, SE = 0.04, p < .001$ ; (3)  $\beta = 0.04, SE = 0.04, p = .412$ ; (4)  $\beta = -0.12, SE = 0.04, p < .010$ .

significant interaction was found between teacher support and descriptive norms on the slope of behavioral engagement ( $B = 0.28$ ,  $SE = 0.09$ ,  $p < .001$ ,  $ES = 0.70$ ). As illustrated in Fig. 1, high levels of teacher support in combination with descriptive norms endorsing engagement revealed the most beneficial trajectory (Hypothesis 4). In these aligning classrooms, students show the highest initial levels of engagement, which remains the highest over time. In non-aligning classrooms with where high levels of descriptive norms are combined with low teacher support, relatively high initial levels of behavioral engagement were also found. However, the decrease in behavioral engagement over time was steeper than for aligning classrooms ( $\beta = -0.24$ ,  $SE = 0.04$ ,  $p < .001$  versus ( $\beta = -0.18$ ,  $SE = 0.04$ ,  $p < .001$ ). Furthermore, students in classrooms with high teacher support but low levels of descriptive norms had lower initial levels of behavioral engagement, but less steep decreases in behavioral engagement over time ( $\beta = -0.12$ ,  $SE = 0.04$ ,  $p < .010$ ).

In addition, interactions between teacher support and initial levels of behavioral engagement (Intercept:  $B = -0.41$ ,  $SE = 0.21$ ,  $p = .053$ ), and between teacher support and popularity norms were not significant (Intercept:  $B = 0.12$ ,  $SE = 0.15$ ,  $p = .404$ ; Slope:  $B = -0.01$ ,  $SE = 0.06$ ,  $p = .826$ ). Regarding emotional engagement ( $\Delta$ Deviance (4) = 3.73,  $p = .444$ ), we found no significant interactions of teacher support with descriptive norms (Intercept:  $B = -0.14$ ,  $SE = 0.22$ ,  $p = .542$ ; Slope:  $B = 0.02$ ,  $SE = 0.10$ ,  $p = .805$ ), or with popularity norms (Intercept:  $B = -0.11$ ,  $SE = 0.14$ ,  $p = .431$ ; Slope:  $B = 0.09$ ,  $SE = 0.06$ ,  $p = .131$ ). These non-significant findings suggest that the effect of teacher support on initial levels of behavioral and emotional engagement was not affected by descriptive or popularity norms. Also, the effect of teacher support on trajectories of emotional engagement was not shaped by these peer norms.

## Discussion

This longitudinal study investigated three important aspects of the classroom context in relation to adolescents' classroom engagement: (a) the level of teacher support, (b) the prevailing peer norms regarding engagement, and (c) the ethnic classroom composition. Results from multilevel growth models confirmed previous research by showing decreasing trajectories of adolescents' behavioral and emotional engagement during upper secondary school, and identified factors that predict adolescents' engagement. Our results were in line with previous research by revealing the role of teacher support in promoting students' engagement (e.g., Roorda et al., 2011; Roorda et al., 2017). Specifically, we found that the more teachers encouraged, understand, and paid attention to their students, the higher students' behavioral and emotional engagement in Grade 9. However, teacher support did not buffer against the declines in engagement over time, as more teacher support was associated with slightly stronger decreases in emotional engagement over time. In contrast, the bivariate correlations suggest positive associations between teacher support in Grade 9 and behavioral and emotional engagement over time. In general, these finding underscore the importance of sustained teacher support over time, as the positive effect of teacher support in one school year did not extend to subsequent school years. It should be noted that the unexpected findings of the multilevel growth models might be due to a "ceiling effect". As students' initial levels of emotional engagement are rather high, their emotional engagement cannot increase as much over time, resulting in a negative effect. Furthermore, when teachers create warm, positive, and respectful emotional connections with their students, by for instance encouraging students and paying attention to them, they provide an emotionally secure base from which ethnic minority and majority students can explore the learning environment and engage in learning activities (Bergin & Bergin, 2009; Hamm & Hoffman, 2016).

Furthermore, our results indicated that predominantly descriptive norms, and not popularity norms, shape adolescents' behavioral and emotional engagement. As expected, descriptive norms that promote

engagement in the classroom positively affected students' own behavioral and emotional engagement in Grade 9 (Hypothesis 2a; Farmer et al., 2011; Hamm, Schmid, Farmer, & Locke, 2011). This supports the notion that descriptive norms can affect individual behavior as students may learn from others how to react to classroom assignments and may shape their behavior accordingly (Bandura, 1977; Cialdini et al., 1991). However, descriptive engagement norms were also associated with stronger decreases in adolescents' individual classroom engagement over time. Yet, the bivariate correlations suggest positive associations between descriptive norms in Grade 9 and behavioral and emotional engagement over time. Therefore, these results underscore the importance of sustained high classroom-levels of behavioral and emotional engagement for students' own engagement, as the positive effect of descriptive norms did not extend to subsequent school years. Nevertheless, findings of the multilevel growth models should be interpreted with caution, as this also might be due to a "ceiling effect". Regarding popularity norms, we found that students who were less behaviorally engaged in school were more likely to be seen as popular by their classmates. However, we found no evidence that the behavior of these popular students shaped other students' behavior (Hypothesis 2b). This seems to suggest that social influence on students' engagement is predominantly driven by the school behaviors and attitudes of all peers rather than those of popular peers. An explanation for this unexpected finding could be related to the developmental period we studied. Possibly, striving for high peer status and securing a position in the peer group, which are central mechanisms underlying the effect of popularity norms, are less important in mid-adolescence than in early adolescence, when students have to navigate a new social environment after transitioning to secondary education (LaFontana & Cillessen, 2010).

Further, we found that the two ethnic diversity measures related differently to students' behavioral and emotional engagement. Unexpectedly, higher proportions of ethnic majorities in the classroom were related to steeper decreases of emotional engagement during Grades 9 to 11 (Hypothesis 3a). This seems to suggest that having more ethnic minorities in the classroom is beneficial for students' emotional engagement. In their study, Demanet and Van Houtte (2014) postulate that students in schools with a large proportion of ethnic minorities are more likely to compare themselves with other ethnic minorities who generally have few positive prospects. Consequently, this comparison mostly turns out positive, resulting in more optimistic beliefs among the ethnic minority, but ethnic majority students as well (Demanet & Van Houtte, 2011). Regarding ethnic heterogeneity, we found that more ethnic diversity in the classroom is associated with less steep decreases in behavioral engagement over time (Hypothesis 3b). This result was consistent with prior research showing that attending ethnically heterogeneous classrooms is beneficial for numerous outcomes, such as self-worth and perceptions of school safety (Juvonen et al., 2006). Extending prior research, we found that this positive effect holds for both ethnic minorities and majorities. In line with the ethnic density hypothesis, ethnic in-group presence and support can buffer against problem behavior at school (Geven, Kalmijn, & van Tubergen, 2016). It is possible that more heterogeneous classrooms provide students with the opportunity to establish same-ethnicity friendships and contribute to their feeling of belongingness, which in turn, could foster students' behavioral engagement in school (Benner & Crosnoe, 2011).

In addition, our study revealed that ethnic majorities and low SES students generally had lower levels of emotional engagement in Grade 9 compared to other students. This suggests that these students tend to have lower interest, enjoyment, and enthusiasm in learning activities, but exhibit similar levels of behavioral engagement as other students. Moreover, we found no differences between ethnic minorities and majorities in the role of teacher support (Hypothesis 1b), peer norms (Hypothesis 2c), ethnic classroom composition (Hypothesis 3c), and socio-economic status in shaping their classroom engagement. This suggests that classroom engagement of ethnic minorities in Belgium are

not more contingent on risk and resource factors in the classroom context compared to their majority peers in the same context, as suggested by the risk and resilience perspective (Motti-Stefanidi & Masten, 2013). As evidenced in this study, ethnic minorities and majorities generally have similar needs for supportive school environments, and contradicts common ideas that creating an inclusive school environment for minorities would come at the cost of ethnic majority students. Consequently, our study found no support for the academic risk hypothesis, stating that at-risk students benefit more from supportive teacher-student relationships than other students (Ewing & Taylor, 2009; Hamre & Pianta, 2001).

An additional goal of this study was to examine the interplay between teacher support and peer norms. In general, results supported the notion that behavioral engagement trajectories were most beneficial when high levels of teacher support combined with peer descriptive norms endorsing engagement. In such aligning classrooms, students showed the highest initial levels of engagement which remained the highest over time. As postulated in prior research, teachers' capacity to engage students in school is most optimal in peer contexts that align with, rather than conflict or compete with, teachers' efforts (Hamm & Hoffman, 2016). In non-aligning classrooms, we either found lower initial levels of engagement (when high teacher support was combined with low classroom levels of engagement) or steeper decreases of engagement over time (when high classroom levels of engagement were combined with low teacher support). Together, these findings support the hypothesis that teacher support and peer norms that promote engagement have a synergistic positive effect on individual student engagement trajectories (Hypothesis 4). In addition, it seems that the interplay between teachers and descriptive norms is focused on adolescents' behavioral engagement, which is more visible for teachers and peers compared to adolescents' emotional engagement. Moreover, we found no evidence that teacher support and popularity norms jointly affect adolescents' engagement, which implies that teacher support has similar effects on adolescents' engagement regardless of the behaviors that relate to popularity.

In sum, our results underscore the role of the classroom context in shaping adolescents' classroom engagement. More specifically, teacher support, descriptive norms, and ethnic classroom composition seem to make a difference in adolescents' behavioral and emotional engagement. Importantly, these aspects of the classroom context were equally important in the development of classroom engagement for ethnic minorities and majorities. Furthermore, we found support for the interplay between teacher support and descriptive norms, with teacher support buffering against declining behavioral engagement in classrooms with peer norms that promote classroom engagement. Positive descriptive norms in the classroom were found to be a necessary condition for the positive role of teacher support in adolescents' behavioral engagement trajectories. In general, our study identified factors that affect adolescents' behavioral and emotional engagement during upper secondary school, which is a critical developmental period in which adolescents generally have the lowest level of engagement (Engels et al., 2017; Wang & Eccles, 2012), and intervening in these school years might protect adolescents from dropping out of school later on.

### Limitations and future directions

Several limitations need to be considered when interpreting these findings. First, teacher support measures were based on adolescent self-reports. It could be that adolescents who are less engaged in school, also report less support from their teachers, which may lead to an over-estimation of the effect of teacher support on adolescents' classroom engagement. Nevertheless, the predictive effect of teacher-student relationship quality on adolescents' engagement has been evidenced in studies using different informants for both variables (e.g., Doumen, Koomen, Buyse, Wouters, & Verschueren, 2012; Engels et al., 2016; Wang & Eccles, 2012). Yet, for future research it could be interesting to

include multiple sources of information, such as teacher and peer perspectives on teacher support and/or classroom engagement to test for possible differences across these perspectives. Also, other aspects of the teacher-student relationship are also worth investigating, for instance comparing both positive (e.g., closeness, autonomy support) and negative (e.g., control, conflict) aspects of teacher-student relationships as precursors of adolescents' classroom engagement.

Second, in line with research on teacher-student relationships in secondary education (Roorda et al., 2011), adolescents were asked about the support they experienced from teachers in general. In this way, we aimed to capture adolescents' overall sense of teacher support, which has been found to impact students' school-related behaviors and attitudes (De Laet et al., 2016a). Another possibility would be to measure adolescents' perceived support with one specific teacher, for instance, their mentor, and thus reflecting dyadic teacher-student relationship quality. However, in school systems where students have many teachers, such as in Belgium, these dyadic interactions do not necessarily provide an adequate reflection of the relational support students experience during their school year.

Third, although our study focused on both adolescents' behavioral and emotional investment in classrooms, more studies should examine how dimensions of engagement relate to each other over time (Fredricks et al., 2016). The dimensions of engagement are composed of dynamic processes in students' attitudes, behaviors, and feelings toward school. Whereas studying engagement dimensions separately does provide insights into the development, antecedents, and consequences of these separate constructs, it is important to examine multiple engagement dimensions simultaneously in order to fully explain adolescents' behaviors and emotions toward schools (Upadaya & Salmela-Aro, 2013; Wang, Willett, & Eccles, 2011). In addition, our study focused on behavioral and emotional engagement, reflecting adolescents' behavioral investment and emotional states during learning activities in the classroom. Yet, future research could consider to investigate cognitive engagement as well, which provides insights in, for instance, adolescents' willingness to participate in learning activities.

Furthermore, it would be interesting to examine changes within the school context in relation to the development of classroom engagement, as well. For instance, by investigating how changes in the individual teacher-student relationship or peer context relate to changes in adolescents' engagement over time. Yet, there are some indications that changes in descriptive norms and status norms are rather small over the school years (Galván, Spatzier, & Juvonen, 2011; Shin, 2017). In addition, we encourage future researchers to investigate differences between ethnic subgroups as ethnic minorities in our study represent students from a variety of ethnic backgrounds, which might come with specific resources as well as risks that affect their engagement in school (Upadaya & Salmela-Aro, 2013).

### Practical implications

Our study showed that teachers are important in promoting adolescents' behavioral and emotional engagement in two ways. First, by creating supportive relationships with their students, teachers can stimulate adolescents' behavioral and emotional engagement in school. Second, by promoting high levels of engagement in the classroom, as these descriptive norms positively contributes to adolescents' own engagement. In addition, it is important for teachers to continue to support their students each school year. Moreover, ethnic minorities and majorities seem to have similar need for supportive social environments. Furthermore, this study revealed that more ethnic diversity in the classroom, such as including higher proportions of ethnic minorities and various ethnic backgrounds, positively relates to adolescents' classroom engagement.

Further, ethnic majorities and boys could be at particular risk of becoming disengaged from school, as both ethnic minorities and girls had, on average, more beneficial engagement trajectories. Thus,



practitioners should closely monitor these groups of students to prevent them from entering downwards trajectories leading to school dropout. Intervention programs aimed at changing the peer culture and stimulating engagement could be effective. For instance, the developmentally based one-year intervention program for teachers developed by Hamm et al. (2010) can be effective, which focuses on three components: (a) promoting engagement by providing structured formats for instructional activities that maintain attention and involvement of the students, (b) enhancement of behavioral management by centering proactive and effective classroom behavior management strategies, and (c) management of social dynamics by creating teachers' awareness of the classroom social dynamics in relation to adolescents' classroom engagement. This program is found to be effective in creating more positive peer group attitudes toward schooling (Hamm et al., 2010). In general, our study revealed the importance of teacher support, descriptive peer norms, and ethnic classroom composition in shaping the behavioral and emotional engagement of both ethnic minorities and majorities. Moreover, findings suggest that teachers are most effective in classrooms that align with, rather than conflict or compete with, teachers' efforts to engage adolescents in school. Thus, teachers should be aware of the interplay between the peer norms in the classroom and their own behavior.

### Author statement

MCE, KV and KP conceived the research idea of this study. MCE performed the statistical analysis and took the lead in writing the manuscript. MCG and JKD provided feedback on the intellectual content of the manuscript. KV and KP supervised this research project and helped shape the research, analysis, and manuscript. All authors discussed the results and contributed to the final manuscript.

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### Declaration of Competing Interest

None.

### Appendix A. Supplementary data

Supplementary material to this article can be found online at <https://doi.org/10.1016/j.appdev.2020.101156>.

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